

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Angela J. Martin Examiner #: 76027 Date: 8/28/03
 Art Unit: 1745 Phone Number 30 5-0586 Serial Number: 09/586,667
 Mail Box and Bldg/Room Location: CP3-8A05 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Nonaqueous Electrolyte Battery
 Inventors (please provide full names): ATTACHED

Earliest Priority Filing Date: 10/7/01; Foreign Priority 11/13/00

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

claims 1-4 only

*positive electrode (cathode) is CoFe_2O_4

*negative " (anode) is lithium-silicon (Li-Si) alloy

*nonaqueous (non-aqueous) electrolyte battery

29

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Searcher: EL
 Searcher Phone #: _____
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 Date Searcher Picked Up: _____
 Date Completed: 8-29-03
 Searcher Prep & Review Time: 5
 Clerical Prep Time: _____
 Online Time: 70

Type of Search

NA Sequence (#) _____ STN \$141.53
 AA Sequence (#) _____ Dialog _____
 Structure (#) (2) Questel/Orbit _____
 Bibliographic (and) Link _____
 Litigation _____ Lexis/Nexis _____
 Fulltext _____ Sequence Systems _____
 Patent Family _____ WWW/Internet _____
 Other _____ Other (specify) _____

Vendors and cost where applicable

=> file reg

FILE 'REGISTRY' ENTERED AT 15:26:43 ON 29 AUG 2003
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=> display history full l1-

FILE 'REGISTRY' ENTERED AT 14:25:46 ON 29 AUG 2003

E. FERRITE/CN

L1 1 SEA FERRITE/CN
L2 289 SEA (CO(L)FE(L)O)/ELS (L) 3/ELC.SUB
L3 83 SEA (LI(L)SI)/ELS (L) 2/ELC.SUB
L4 6764 SEA LI/ELS AND AYS/CI

FILE 'HCA' ENTERED AT 14:40:37 ON 29 AUG 2003

L5 185765 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR GALVANI? OR PRIMARY OR SECONDARY OR WET OR DRY) (2A) (CE
LL OR CELLS)
L6 40291 SEA NONAQUEOUS? OR NONAQ# OR NONH2O OR NONWATER? OR
NON(A) (AQ# OR AQUEOUS? OR H2O OR WATER?)
L7 QUE ELECTROD## OR ANOD## OR CATHOD##
L8 2794 SEA L2
L9 68781 SEA L1 OR FERRITE# OR FERROSPINEL#
L10 164 SEA L1
L11 293 SEA L3
L12 9522 SEA L4
L13 7728 SEA L5 AND L6 AND L7
L14 19 SEA L13 AND L11
L15 1 SEA L14 AND (L8 OR L9 OR L10)
L16 162 SEA L5 AND L11
L17 1 SEA L16 AND (L8 OR L9 OR L10)
L18 1143 SEA L5 AND L12
L19 1 SEA L18 AND (L8 OR L9 OR L10)
L20 0 SEA L13 AND L10
L21 4 SEA L13 AND L8
L22 7 SEA L13 AND L9

FILE 'HCA' ENTERED AT 15:09:16 ON 29 AUG 2003

L23 1546 SEA COFE2O4 OR FE2COO4
L24 7 SEA L5 AND L23
L25 0 SEA L24 AND (L11 OR L12)
L26 15 SEA L15 OR L17 OR L19 OR L21 OR L22 OR L24
L27 18 SEA L14 NOT L26

=> file hca

FILE 'HCA' ENTERED AT 15:27:26 ON 29 AUG 2003
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=> d 126 1-15 cbib abs hitstr hitind

L26 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS on STN
 136:372276 Secondary **nonaqueous**-electrolyte **battery**
 with **cathode** containing **ferrite** or iron sulfide.
 Kusumoto, Yasuyuki; Fujimoto, Masahisa; Fujitani, Noboru; Miyake,
 Masahide (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho
 JP 2002151075 A2 20020524, 10 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 2000-345491 20001113.

AB The title **battery** is equipped with a **cathode**
 contg. a **ferrite** and an **anode** contg. a Li alloy.
 Alternatively, the **battery** is equipped with a
cathode contg. FeS₂ and an **anode** contg. a Li
 alloy. The **battery** has high capacity and energy d.

IT 68848-64-6
 (anode; cathode contg. ferrite or
 iron sulfide in secondary **nonaq.**-electrolyte
battery)

RN 68848-64-6 HCA

CN Lithium alloy, nonbase, Li,Si (9CI) (CA INDEX NAME)

Component Component
 Registry Number

=====+=====

Li	7439-93-2
Si	7440-21-3

IT 12052-28-7, Cobalt **ferrite**
 (cathode contg. ferrite or iron sulfide in
 secondary **nonaq.**-electrolyte **battery**)

RN 12052-28-7 HCA

CN Cobalt iron oxide (CoFe₂O₄) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====	=====+=====	=====
O	4	17778-80-2
Co	1	7440-48-4
Fe	2	7439-89-6

IC ICM H01M004-58

ICS H01M004-02; H01M004-40; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **ferrite cathode secondary nonaq**
battery; iron sulfide **cathode lithium**
battery

IT **Battery cathodes**
 (cathode contg. ferrite or iron sulfide in
 secondary **nonaq.**-electrolyte **battery**)

- IT **Ferrites**
(cathode contg. ferrite or iron sulfide in secondary nonaq.-electrolyte battery)
- IT **Secondary batteries**
(lithium; cathode contg. ferrite or iron sulfide in secondary nonaq.-electrolyte battery)
- IT **Lithium alloy, base**
(anode; cathode contg. ferrite or iron sulfide in secondary nonaq.-electrolyte battery)
- IT **68848-64-6**
(anode; cathode contg. ferrite or iron sulfide in secondary nonaq.-electrolyte battery)
- IT **1309-37-1, Ferric oxide, uses 1317-61-9, Iron oxide (Fe₃O₄), uses 12052-28-7, Cobalt ferrite 12063-10-4, Manganese ferrite 12068-85-8, Iron disulfide 12168-54-6, Nickel ferrite 220152-22-7, Iron potassium oxide (Fe₁₁K₁.4O₁₇)**
(cathode contg. ferrite or iron sulfide in secondary nonaq.-electrolyte battery)
- L26 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS on STN
- 134:149951 Chemical reactivity of perovskite oxide SOFC cathodes and yttria stabilized zirconia. Kostogloudis, G. Ch.; Tsiniarakis, G.; Ftikos, Ch. (Laboratory of Inorganic Materials Technology, Department of Chemical Engineering, National Technical University of Athens, Athens, GR-157 80, Greece). Solid State Ionics, 135(1-4), 529-535 (English) 2000. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..
- AB The chem. reactivity of perovskite oxide SOFC cathodes and yttria stabilized zirconia (YSZ) solid electrolyte was studied. The perovskite oxides that were examd. were La_{1-x}Sr_xCo_{0.2}Mn_{0.8}O_{3-d}, La_{1-x}Sr_xCo_{0.2}Fe_{0.8}O_{3-d} and La_{1-x}CaxCo_{0.2}Fe_{0.8}O_{3-d} (0.1toeq.x.1toeq.0.5), as well as, the A-site deficient oxides La_{0.6-z}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-d}, La_{0.6}Sr_{0.4-z}Co_{0.2}Fe_{0.8}O_{3-d} and (La_{0.6}Sr_{0.4})_{1-z}Co_{0.2}Fe_{0.8}O_{3-d} (0.1toeq.z.1toeq.0.2). Equimolar perovskite/YSZ powder mixts. were prepd. and annealed at 1100.degree.C for 120 h. X-ray diffraction anal. was conducted to identify any reaction products. Si-std. was used as an internal std. for d-value calibration, during the detn. of the lattice parameter of cubic YSZ. The main reaction products were La₂Zr₂O₇ for the undoped and lightly doped Fe-contg. compns. and (Sr/Ca)ZrO₃ for the Sr/Ca doped compns. Also, CoFe₂O₄ was formed in the case of the Fe-contg. compns. and monoclinic zirconia for La_{1-x}CaxCo_{0.2}Fe_{0.8}O_{3-d} with x = 0.4, 0.5. A-site deficiency in La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-d}-based perovskites reduced the amt. of SrZrO₃ formed, only in the case of La_{0.6}Sr_{0.4-z}Co_{0.2}Fe_{0.8}O_{3-d} with 0.1toeq.z.1toeq.0.2 and (La_{0.6}Sr_{0.4})_{1-z}Co_{0.2}Fe_{0.8}O_{3-d} with z=0.2. The lattice parameter of YSZ exhibited a shift, corresponding to a lattice contraction, due to the diffusion of the transition metal cations from the perovskite into YSZ.

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 78
- IT Annealing
 Fuel cell cathodes
 Fuel **cell electrolytes**
 Solid state fuel cells
 (high temp. reactivity of perovskite oxides and yttria stabilized zirconia)
- IT 12013-47-7, Calcium zirconium oxide (CaZrO_3) 12031-48-0, Lanthanum zirconium oxide ($\text{La}_2\text{Zr}_2\text{O}_7$) 12036-39-4, Strontium zirconium oxide (SrZrO_3) 12052-28-7, Cobalt iron oxide (CoFe_2O_4)
 (high temp. reactivity of perovskite oxides and yttria stabilized zirconia)
- L26 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS on STN
- 134:44424 Reactivity and interdiffusion of alternative SOFC cathodes with yttria stabilized zirconia, gadolinia doped ceria and doped lanthanum gallate solid electrolytes. Kostoglou, G. Ch.; Tsiniarakis, G.; Riza, F.; Ftikos, Ch. (National Technical University of Athens, Greece). EUROMAT 99, Biannual Meeting of the Federation of European Materials Societies (FEMS), Munich, Germany, Sept. 27-30, 1999, Meeting Date 1999, Volume 13, 175-180. Editor(s): Grassie, K. Wiley-VCH Verlag GmbH: Weinheim, Germany. (English) 2000. CODEN: 69AMNI.
- AB The chem. compatibility between the cathode compn. $\text{Pr}_{0.8}\text{Sr}_{0.2}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$ and the electrolyte compns. yttria stabilized zirconia (YSZ), $\text{Ce}_{0.8}\text{Gd}_{0.2}\text{O}_{1.9}$ (CGO) and $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.9}\text{Mg}_{0.1}\text{O}_{3-\delta}$ (LSGM) was investigated. Also, the influence of the substitution of Al for Fe on the reactivity of the cathode with YSZ was examd. All oxides were single phase materials except for LSGM, which contained two addnl. phases, namely $\text{LaSrGa}_3\text{O}_7$ and LaSrGaO_4 . Two types of expts. were performed: (a) reactivity expts. by XRD in cathode/electrolyte powder mixts. and (b) diffusion expts. by SEM/EDX anal. in cathode/electrolyte double-layer pellets. $\text{Pr}_2\text{Zr}_2\text{O}_7$, SrZrO_3 and CoFe_2O_4 were formed by the interaction of the cathode materials with YSZ. Substitution by Al at the B-site of the perovskite cathode led to a decrease of its reactivity with YSZ. No reaction products were formed for powder mixts. of $\text{Pr}_{0.8}\text{Sr}_{0.2}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$ and CGO or LSGM electrolytes. High Co and Fe diffusion into LSGM was identified. Pr, La and Ga show a smaller tendency for diffusion. The diffusion of transition metal cations into LSGM electrolyte caused the destabilization and disappearance of the second phases in the interdiffusion zone.
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST fuel cell cathode reactivity yttria stabilized zirconia; gadolinia doped ceria reactivity fuel cell cathode; lanthanum gallate reactivity fuel cell cathode; **electrolyte reactivity fuel cell cathode**
- IT Fuel cell cathodes
 Fuel **cell electrolytes**
 Solid state fuel cells